

WHAT IS CLAIMED IS:

1. A key switch device comprising:

inner and outer link members connected to each other in a  
5 crossing manner to mutually move in a scissors fashion, each of  
the inner and outer link members having support protrusions  
respectively provided in pairs at lower and upper ends thereof;

a key top provided with receiving portions adapted to  
receive the support protrusions provided at respective upper  
10 ends of the inner and outer link members;

a elastic switch provided at an inner surface thereof  
with a downward protrusion adapted to perform a switching  
operation in accordance with a vertical movement of the key  
top;

15 a support plate arranged beneath the key top, and  
provided with cocking members at predetermined positions,  
respectively;

a membrane arranged on the support plate, and printed  
with a circuit having a contact, with which the downward  
20 protrusion of the elastic switch comes into contact, and a  
switch pattern, the membrane having slots for allowing the  
cocking members to be upwardly protruded therethrough; and

a mounting member arranged on the membrane, the mounting  
member having support pieces adapted to be engaged with  
25 respective support protrusions provided at the lower ends of

the inner and outer link members, a central opening adapted to receive the elastic switch, and fitting holes adapted to allow the cocking members to be fitted therein.

5           2. The key switch device according to claim 1, wherein at least one of the support protrusion pairs provided at respective lower ends of the inner and outer link members has horizontal surfaces provided at respective support protrusions of the at least one support protrusion pairs, and adapted to  
10       come into contact with the support plate when the key top moves upwardly to a predetermined level, thereby stopping the upward movement of the key top.

          3. The key switch device according to claim 2, wherein  
15       the support protrusions provided with the horizontal surfaces are provided at the lower end of the outer link member.

          4. The key switch device according to claim 3, wherein the support protrusions provided at the lower end of the inner  
20       link member have a cylindrical structure while being laterally movable during the scissors movements of the inner and outer link members.

          5. The key switch device according to claim 4, wherein  
25       the inner link member is provided at a lower surface thereof

with a support groove adapted to come into contact with one lateral end of the mounting member when the key top moves upwardly to the predetermined level, thereby vertically supporting the inner link member.

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6. The key switch device according to claim 5, wherein the support groove has an arc shape.

7. The key switch device according to claim 1, wherein  
10 the opening of the mounting member has a circular shape, and the mounting member has an annular frame formed around the circular opening while having a predetermined thickness.

8. The key switch device according to claim 1, wherein  
15 the support pieces of the mounting member are provided in pairs at front and rear ends of the mounting member, respectively, such that the support pieces included in the support piece pair provided at the front end of the mounting member are engaged with respective support protrusions provided at the lower end  
20 of the inner link member, whereas the support pieces included in the support piece pair provided at the rear end of the mounting member are engaged with respective support protrusions provided at the lower end of the outer link member.

25 9. The key switch device according to claim 1 or 8,

wherein each of the support pieces has a 180°-rotated L shape.

10. The key switch device according to claim 1, wherein the mounting member is made of stainless steel.

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11. The key switch device according to claim 1, wherein the fitting holes are arranged at opposite sides of the opening, respectively, such that they are symmetrical with respect to a center line of the opening.

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12. The key switch device according to claim 11, wherein the mounting member has recesses respectively formed around the fitting holes.

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13. A method for manufacturing a key switch device, comprising the steps of:

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(A) cutting a plurality of first sheets respectively corresponding to the key switch devices to be manufactured, while having a predetermined strength, and forming support pieces, an opening, and fitting holes at each of the cut first sheets, thereby forming a plurality of mounting members respectively corresponding to the key switch devices;

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(B) cutting a second sheet to have a structure conforming to a shape required in a keyboard, and forming a plurality of cocking members at the cut second sheet, thereby forming a

support plate;

(C) preparing a membrane printed with a flexible switching circuit, and forming a plurality of slots, corresponding in number to the cocking members, at positions  
5 corresponding to those of the cocking members, respectively;

(D) attaching the membrane to an upper surface of the support plate, positioning the mounting members on the membrane such that the cocking members are fitted in the coupling holes of the mounting members through the slots of the membrane, and  
10 protruded from the coupling holes at upper ends thereof, respectively, and applying a downward pressure to the protruded upper ends of the cocking members, thereby fixing the mounting members to the support plate;

(E) arranging elastic switches in respective central  
15 openings of the mounting members fixed to the support plate;

(F) preparing a plurality of linkages each including inner and outer link members connected to each other in a crossing manner to mutually move in a scissors fashion, each of the inner and outer link members having support protrusions  
20 provided at lower and upper ends thereof, and engaging the support protrusions provided at respective lower ends of the inner and outer link members included in each of the linkages with the support pieces provided at an associated one of the mounting members, respectively; and

(G) preparing a plurality of key tops each having  
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receiving portions, and assembling the key tops to the linkages such that the support protrusions provided at respective upper ends of the inner and outer link members included in each of the linkages are received in and engaged with the receiving portions of an associated one of the key tops, respectively.

14. The method according to claim 13, wherein the slots are formed, at the step (C), to have a size equal to or slightly larger than that of the cocking members.

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